AMENDMENTS TO THE CLAIMS:

Claims 1-10 Canceled

11. (Currently amended) A composition for impairing a hematologic cancer progenitor cell that expresses CD132, but does not significantly express CD131, comprising an antibody and a cytotoxic agent, wherein the composition binds selectively to CD123 in an amount effective to cause ~~and causes~~ impairment of the hematologic cancer progenitor cell.

12. (Previously presented) The composition of claim 11, wherein the cytotoxic agent is a chemotherapeutic agent.

13. (Previously presented) The composition of claim 11, wherein the cytotoxic agent is a plant-, fungus- or bacteria-derived toxin.

14. (Previously presented) The composition of claim 11, wherein the cytotoxic agent is a radioisotope.

15. (Previously presented) The composition of claim 14, wherein the radioisotope is an alpha-emitting radioisotope.

16. (Currently amended) An assay for detecting the presence of hematologic cancer progenitor cells that express CD132, but do not significantly express CD131 in a sample, comprising introducing to the sample an antibody that binds selectively to CD123 and determining whether the compound binds to a component of the sample.

17. (Previously presented) The assay of claim 16, wherein the antibody is labeled with a detectable label.

18. (Previously presented) The composition of ~~method according to~~ claim 11, wherein the hematologic cancer progenitor cell is a leukemic or malignant lymphoproliferative cell.

19. (Previously presented) The composition of ~~method according to~~ claim 18, wherein the leukemic cell is selected from the group consisting of acute myelogenous leukemia, chronic myelogenous leukemia, melodysplastic syndrome, acute lymphoid leukemia, chronic lymphoid leukemia, and myelodysplastic syndrome.

20. (Previously presented) The composition of ~~method according to~~ claim 18, wherein the malignant lymphoproliferative cell is a lymphoma.

21. (Previously presented) The composition of ~~method according to~~ claim 20, wherein the lymphoma is selected from the group consisting of multiple myeloma, non-Hodgkin's lymphoma, Burkitt's lymphoma, and follicular lymphoma (small cell and large cell).

22. (Previously presented) A method for purifying hematopoietic cells that express CD132, but do not significantly express CD131, comprising, introducing to a bone marrow cell sample or peripheral blood sample a ~~the~~ composition ~~of claim 11 to a bone marrow cell sample or peripheral blood sample~~ comprising an antibody and a cytotoxic agent selected from the group consisting of a chemotherapeutic agent, a plant-, fungus- or bacteria-derived toxin, and an alpha-emitting radioisotope, wherein said composition binds selectively to CD123 in an amount effective to cause cell death.

23. (Previously presented) A method for selectively impairing cancerous progenitor cells that express CD132, but do not significantly express CD131 of a patient in need thereof, comprising introducing to the patient's bone marrow or peripheral blood sample a ~~the~~ composition ~~of claim 11 to the patient's bone marrow or peripheral blood sample~~ comprising an antibody and a cytotoxic agent selected from the group consisting of a chemotherapeutic agent, a plant-, fungus- or bacteria-derived toxin, and an alpha-emitting radioisotope, wherein said composition binds selectively to CD123 in an amount effective to cause cell death.

24. (Previously presented) A method of purging cancerous progenitor cells that express CD132, but do not significantly express CD131 in a patient in need thereof, comprising:

(a) providing an antibody that binds selectively to CD123;

(b) introducing the antibody to the patient to permit binding of the antibody to cancerous progenitor cells that express CD132, but do not significantly express CD131; and

(c) removing bound antibody-cancerous progenitor cells.

25. (Previously presented) The method according to claim 24 wherein the antibody is introduced to the bone marrow of the patient.

26. (Previously presented) The method according to claim 24 wherein the antibody is introduced to the peripheral blood of the patient.